
Shifting the balance of stem cell renewal and cancer

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There's an interesting story from CIRM grantees at Sanford-Burnham this week, showing a relationship between tissue-specific stem cells in the body and cancer. It all started with an observation in people with Down Syndrome: they are less likely than other people to develop cancers.

This observation eventually led to the discovery that a gene called Ets2 - an extra copy of which is present on the spare chromosome 21 in people with Down Syndrome - can protect against colon tumors. The reason why has to do with the stem cells lurking in the colon.

Stem cells do two things: They make more of themselves (self-renewal) and they mature into tissues such as those lining the colon (differentiation). The more self-renewal, the higher the risk of developing tumors because as the cells divide they might incur cancer-causing mutations. Ets2 seems to lower the risk of tumors by slowing how quickly the stem cells turn over and driving those cells to differentiate instead.

A blog entry by Sanford-Burnham quotes senior author Robert Oshima, who previous to this study had been investigating Ets2 in breast cancers:

“ Dr. Oshima sees this study as more supporting evidence for an unconventional type of cancer treatment called differentiation therapy. "If we can shift the balance to decrease stem cell proliferation and increase differentiation, we might be able to decrease tumor appearance or growth."

The relationship between stem cells and cancer is long-established. CIRM funds many awards studying the so-called cancer stem cells that drive the growth of many tumors. Here is a list of those cancer stem cell awards.

Stem Cells, March 21, 2011

- A.A.

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